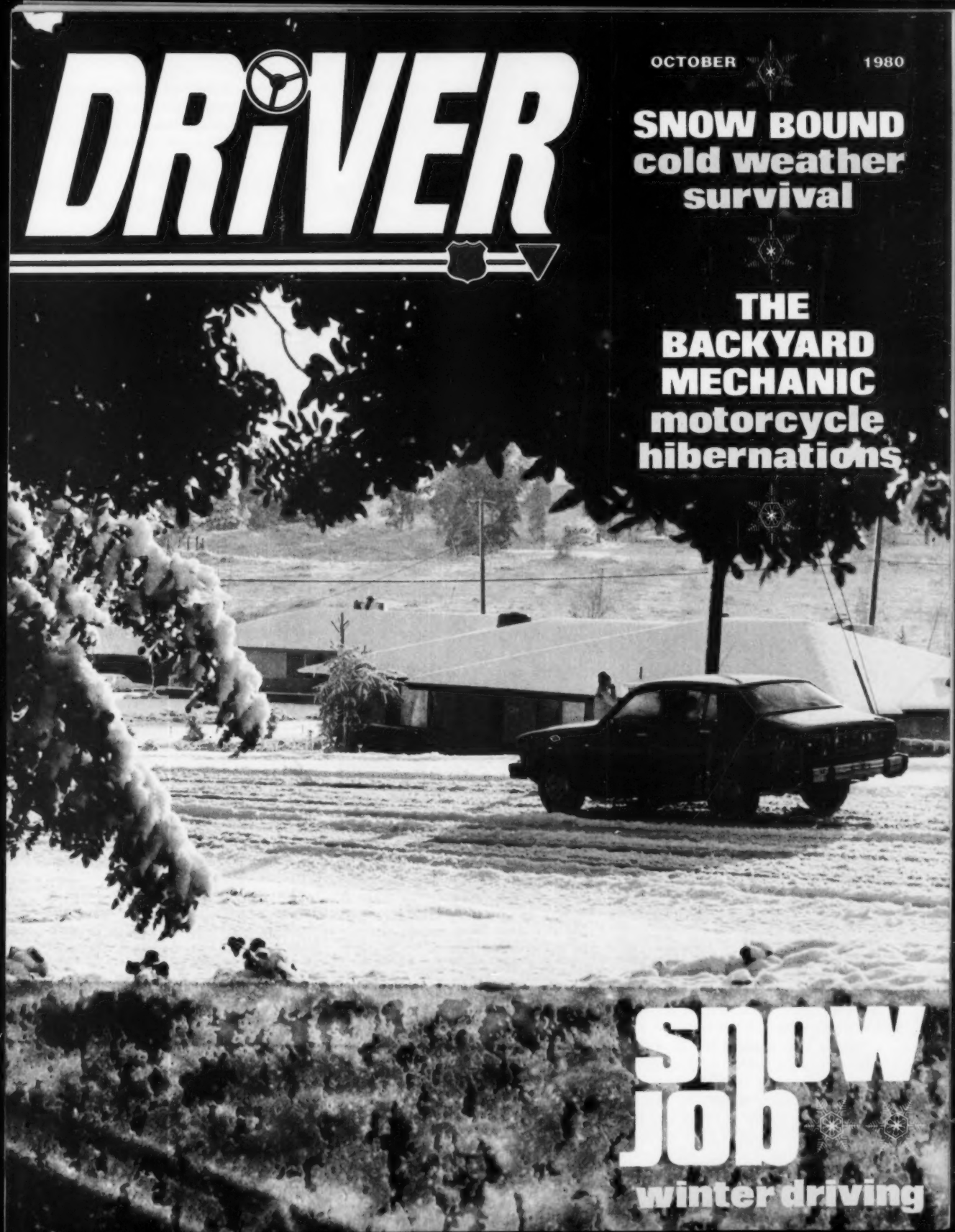
DRIVER

OCTOBER 1980

SNOW BOUND
cold weather survival

THE BACKYARD MECHANIC
motorcycle hibernations



snow job
winter driving

DRIVER

Stranded in the Woods on a Snowy Evening

by Robert Defroster

Where these woods are I do not know
I passed the village hours ago
and no one sees me standing here
To watch my boots fill up with snow.

Nice of them to give you that warning, huh? Pay attention to such signs; they warn of areas that are especially prone to slick conditions in winter.

Expect surprises on any residential street. Kids with sleds like this white stuff, even if you don't.

What happened to our staff poet, we wouldn't want to happen to you. Little problems become big ones in winter, and big ones like the one Robert experienced become . . . well, we're just glad he didn't suffer anything worse than minor frostbite.

To aid you in getting yourself and your car through the cold season, we've prepared a little information on getting ready for the snow and on driving through it. Don't waste any time! Read and get ready – the wind is shifting and it's getting colder.

Repair and replace: If you're like a lot of drivers, you've let some maintenance items wait until they were absolutely necessary before you saw to them. Well, time's up. Get out the wrench.

First, you need to insure the car is in good running condition. A tune-up should be one of the first things you accomplish, if you haven't done it in a while. The complete tune-up will make the car run smoothly. It will also add to your gas mileage, a problem in winter.

At the same time, change the oil. The grade of oil you use in summer may not be a good one to use in winter. Cold temperatures will cause oil to thicken, and thick oil makes starting more difficult on cold mornings. Use a thinner-weight oil, or one of the multi-weights. See our chart for a good idea of the kind to choose. Change the oil filter at the same time because the old one will be full of dirty oil. *Always* change the filter any time you change oil, no matter what the manual says – filters don't cost that much.

Check the air filter, too. It should be changed if you can't see light through it.

As you know if you've been reading DRIVER's Backyard Mechanic for the past couple of months, there's a lot to know about your engine's cooling system. Now is a good time to get those magazines out and read the Backyard Mechanic again.

Remember that old coolant ("anti-freeze") in the radiator will protect against freeze-ups, but it may not be able to inhibit rust. If you haven't replaced the coolant in the past year, do so now.

Another under-hood item to check is the battery. This little box powers you for starting the car, but it has many more jobs in winter than the rest of the year. It must supply juice for the heater, the windshield wipers, the defroster, and (sometimes even in daytime) the lights. If you have a strong battery, great. If not, either trade it in on a new

My car has two flats in the rear
And there is not a farmhouse near
Between the woods and frozen lake
This darkest evening of the year.

The wind that starts my knees to shake
Chastises me for my mistake.
My only option makes me weep:
The frozen hike that I must take.

The snow is frosty, white and deep
But I have toes I want to keep,
And miles to walk before I sleep,
And miles to walk before I sleep.

snow job

one, or have it charged if it will hold a charge.

While you're under the hood, check all the fluid levels. Pay special attention to the washer solution. Although water might be good enough for the summer, you need something that won't freeze in winter. Fill the reservoir with the solution you buy in the automotive section of the store. Keep some handy; you'll use a lot of it.

Of course, the solution won't do much good if you don't have good wiper blades. Replace them if they're cracked or not supple any more. The better you can see out, the safer you'll be.

You'll find that changes in temperature, water, ice, salt and sand will do a lot of damage under the car. You could start the winter with a working exhaust system and end it with a rusted-out one. Examine the entire exhaust system carefully *now*. If your muffler is ready to go toes-up, replace it. A leaky exhaust is very dangerous. It can put deadly carbon monoxide into the passenger compartment.

A complete lube is also a good idea, as is a front-end alignment. The latter is for two purposes. One: To make your car handle better. Two: To promote longer life for your tires. Out-of-alignment front wheels make the car handle squirrelly, and this in turn makes the tires wear unevenly. You can pay a small amount now for an alignment, or pay a large amount later for some new tires.

We want to get to tires, but before that we'll say a few words about brakes. Your car's ability to stop can be *vitally* important in winter. It's no time for mushy brakes. Check the pads (or linings) now and replace them if necessary.

Another "Icy" sign. This one warns you that although the pavement may be dry, some ice patches may be lurking in the shadows where the sun never reaches. This is called "black ice" and it's very dangerous.

Snowshoes: Tires. We can, and often do, devote many pages to tires. We'll be doing another "Tire Round-up" in a few months. For right now, let's talk about the tires to use in winter.

First, it depends on what kind of weather you're going to encounter. If your area of the country gets no precipitation, you won't need to worry about them, as long as there's enough tread to keep you out of trouble with the law. However, for the vast majority of us, there'll be some kind of wetness, either snow and ice, or rain.

It's a question of tread. The tread on a tire is designed for traction on wet surfaces, because it allows the water to flow through, while maintaining tire surface on the road. Good tires with plenty of tread will be sufficient for rainy areas.

For the areas that get some snow (or a lot of it), you'll want to shop around for some snow tires. Snow tires have

continued

THE EDITOR SPEAKS

DOUBLE CLUTCH

CONFUSION ABOUT CAR INSURANCE

A reader in Germany recently complained to us that when his luxury-type American car was damaged in an accident, his insurance company "totaled" the car over his objections and then paid him considerably less than it will cost him to replace the car when he returns stateside. Unfortunately, there is a lot of confusion about how automobile comprehensive or collision coverage really works.

First, an insurance company will declare your vehicle a total loss when the cost to repair the damage plus the salvage value equals or exceeds the actual cash value.

Second, actual cash value (ACV) is the market value at the time and place of the loss. Since our reader's loss occurred in Germany, the German market value controlled the amount of his insurance company's payment. Larger American autos are worth less in most foreign locations than they are back home because of gasoline prices, unavailability of repair parts and other factors. As a matter of fact, the actual cash value of a car can vary from state to state. Some cars in Michigan are worth less than comparable cars in Alaska or Hawaii.

Another thing that often causes heartburn is the sudden discovery that one's insurance company does not believe "customization" increases the actual cash value of the vehicle. If you have invested in a splendid paint job, chromed headers, special tires and the like, be aware that you will not recover dollar for dollar in case the car is stolen or destroyed. Insurance companies say this is because the market for a customized vehicle is extremely limited when compared to the market for a stock model.

The time for us "insureds" to learn about the exact coverage we are buying is before we pay the first premium, not when we are ready to make a claim. If our reader had understood how his insurance company would determine the value of his car in Germany, maybe he'd have left it at home with the folks.

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heavier treads and deeper grooves to give you extra traction. And you'll need it. No amount of driving skill will make the difference if you can't get your car moving.

There are snow tires to match whatever tires you have on the car. Matching is an important consideration. If your car is sitting on steel-belted radials, you should get steel-belted radial snow tires. If you have bias-plies, get bias-ply snow tires. The tire companies and experts all agree: Don't mix radials with non-radials. Radials have entirely different handling characteristics.

You've noticed how the radials have a "squashy" appearance, as though they were low on air even when they're not? That's because of their more highly flexible sidewalls. These allow them to assume a new direction quickly when you turn – they handle better than the ordinary tires. A combination of radials and non-radials will give you handling problems.

Another thing on snow tires: They always go on the drive wheels. That is, on the back for rear-wheel-drive cars, and on the front for front-wheel-drive cars.

You may want to go one step further with the snow tires – studs. Studded tires can provide some extra traction in certain conditions (see the illustration). However, studs are not universally allowed, and some states limit the time of year in which they're legal. Study the table to see what your state allows, and keep it in mind if you plan any interstate travel during the winter months. Your state may allow them and the state next door may ticket you.

There are several brands of "all-season" tires on the market that you might consider if your area suffers from changeable weather. These are designed to perform well on snowy, wet or dry roads.

The final word . . . sort of: We've saved the best word in traction for last: Chains. Tire chains give you the best available traction in winter. They also cost less than a spare set of tires. Those are the advantages.

The disadvantage is the hassle of attaching and removing them, for instance if the weather warms during the day and melts the snow. Law enforcement authorities *everywhere* feel about chains the same way some of them do about studs – they damage the roads. However, chains are not the big hassle they're made out to be. We have the instructions (with photos) right here in this article. Thoughtful, aren't we?

Allow us to restate a pet peeve of ours. We don't like to hear people say they let air out of their tires for better

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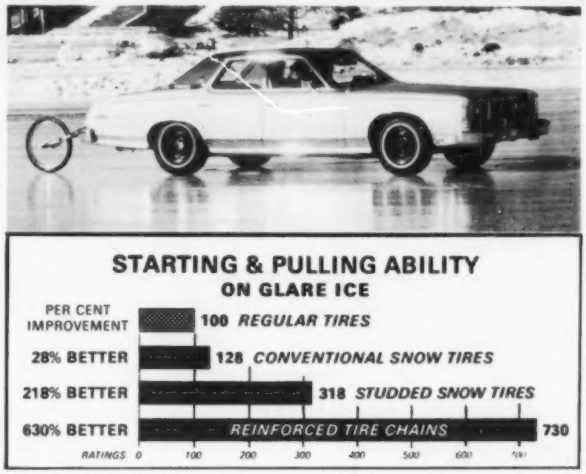

Studies show that conventional snow tires provide only a small improvement in pulling ability on glare ice as compared with regular tires. Studded tires, on the other hand, develop about three times the pull and reinforced tire chains about seven times the pull of regular tires.

Safe Winter Driving League.

SNOWBLIND

Winter isn't the best time of year for unlimited visibility. Depending on your part of the country, you may have to face heavy rains, thick fog, or a fierce ground blizzard. Any of these conditions should make you think twice about any trip that isn't absolutely necessary. If you can't see, you shouldn't go.

But how about the other side of the coin? The day after a bad snowstorm the sun often comes out and is literally blinding as it glints off the fresh, white snow. If the road conditions are good enough, you might as well drive to where you want to go.

But for good vision, dig into your summer beach equipment and find your sunglasses. You'll be protecting your eyes *and* your ability to drive.

Lowest Atmospheric Temperature Expected	Single Viscosity Oils	Multi-Viscosity Oils
32° F	20, 20W	10W-30, 10W-40
0° F	20W	10W-30, 10W-40
Below 0° F	5W*	5W-20, 5W-30

*SAE 5W single-viscosity oils should not be used for sustained high-speed driving (above 55 mph).

(right)
This guide is for determining the proper weight oil for your car in winter.

(left) **Tire chains** are simpler than you might think. Spread the chains out *behind* the drive wheels, with cleats (if any) facing *up*. Then attach them to the wheel with the chain applier, a spring steel wire device. (right) **Gather** the chains up close to the tire, so they won't catch on the fenders when you move the car.

(left) **Drive forward** one wheel revolution, so that the chain is carried around the tire. Then fasten the hooks at the ends of the chains, the one on the inside of the wheel first.
(right) **This set** of chains has a special elastic band that helps to hold them in place.

traction. This technique really messes up the handling of your car, and it makes the tires wear out faster. It's cheaper to buy a set of snow tires that you can use for several years.

Stocking up: Once you've got the snow tires (or chains) your big equipment items are taken care of. Now you need to get your car stocked with the supplies that make winter an easier season. Chief among these are the tools. Your little tool box should contain a couple of adjustable wrenches, some combination (box-end and open-end) wrenches, a few different sized screwdrivers (including Phillips'), a pair of pliers, and some electrician's tape. For temporary repairs, a roll of duct tape and a roll of medium gauge wire will be helpful.

Make sure your bumper jack works, and keep the spare aired up.

You should also keep a few spare parts and fluids in the trunk. Engine oil, brake fluid and automatic transmission fluid are needed, and it might be wise to carry some spare coolant too. Find a place for some spare fuses and bulbs (they're small) and a spare fan belt. You should pack a good first aid kit at all times, and some matches.

For breakdowns that occur at night, keep a flashlight handy. It'll help you see what you're doing. And for *any* breakdown, keep a few flares or a set of reflective warning triangles in the trunk. You want the others to see you while you're under the hood.

Now for a few things that are uniquely winter items. First, there's the ice scraper. You will be completely unable to see if you can't scrape all the ice off the windows. Get a scraper with a long handle and a brush on the other end, for brushing the snowdrifts off the car.

Get a small shovel, like a military camp shovel. This can be folded up for storage. You might need a shovel if you get stuck in deep snow.

LOCKED OUT

One morning a few years ago, one of our staff found himself running late. It got worse when he got outside—a heavy snowfall had left drifts everywhere. Then came the capper: His doorlocks were frozen.

He tried warming the key by putting it inside his glove and by breathing on it, but neither lock would budge. Just before he was ready to give up, he decided to try the hatch on his little compact. Although it had been facing into the wind all night and should have been frozen more solidly than the other locks, it turned with no trouble. He was able to enter the car through the hatch and get the engine and defroster going to thaw the entire car out.

He might have had a less frustrating morning if he had planned on such a problem. A small quantity of ethylene

In the morning after a storm you'll have no choice but to shovel your way to the car and dig it out.

Don't drive around with a load of snow on the car. It will blow off as you drive and leave a dense cloud for others to go through, and besides, the weight of the snow will decrease your gas mileage.

For traction, carry a small quantity of sand or – of all things – kitty litter. The latter has the advantage of being light and easy to clean out of the trunk in the springtime, and it does provide very good traction on snow.

If you should get stuck and the sand and shovel don't get you out, have a blanket in the trunk. You can use this to keep yourself warm until the tow truck comes.

Remember our talk above about the battery? Sometimes cold and the strain of running all those accessories will weaken your battery. Keep a good set of jumper cables in the trunk, in case the battery won't turn the engine over (see page 29 for safe jumping procedures).

And one final item you might not think of: A pair of work gloves of some sort. You won't want to work on the car with bare hands at 10 degrees outside, and you also won't want to ruin your fleece-lined doeskin dress gloves.

Pardon us for another pet peeve. DO NOT carry gasoline in the trunk of your car. It is extremely explosive.

Snowed in: You might think that needing to dig out with a shovel is only a slight possibility. However, it will happen almost every winter morning for a lot of us. Those drivers who are fortunate enough to have a garage or a carport will have little or no difficulty in the morning. But a lot of us have to park on the street. We'll get iced over, snowed on, and then perhaps dumped on by the city snow removal equipment. If you hate the morning digging-out ritual – as who doesn't? – just remember there are millions of other people who have to do it, too. You're not alone.

Get your shovel and dig the car out. Then get the brush and sweep all the snow off the car. It takes longer, but you won't have snow blowing off and blinding people when you finally get moving.

Get in the car and start the engine; then turn the defroster on. This may seem like a waster of power, but it will help you get the ice off the windows easier. Also, your car will be warm inside when you finally get the ice off the windows. Besides, you need to know the car will start – otherwise, why go to the trouble of scraping the windows?

Scrape off *all* the windows. You must be able to see in all directions. It's easier just to scrape an area in front of the steering wheel, but the police take a dim view of you if you have only a forward view.

Okay, now you're sitting in a warm car that is cleaned off and humming nicely. Driving that car is not as simple a matter in winter as it is in summer. It requires more patience.

As we are fond of saying, when you're going to drive in the winter, first make a decision: Decide that you are in no hurry. Hurrying (or *trying* to) will only cause your anger to flare up, and it could cause an accident.

When attempting to move the car on ice or snow, don't stomp on the accelerator. There is very little traction on such surfaces and the faster you at-

continued

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glycol antifreeze in a pill bottle could have unstuck the locks. He could have coated the key with the stuff and inserted it into the locks until they moved. Another idea would have been to use a spray lubricant like WD-40 in the locks.

The hatch trick was pure luck.

tempt to start, the more likely you are to spin your wheels. Apply very light pressure on the accelerator, just enough to get the car to crawl forward. Gradually increase the speed. If you try to accelerate sharply just as the car first moves, you'll spin the wheels. Any time the wheels are spinning, you're wasting a lot of very expensive gasoline.

Once you reach a moderate speed, continue at that speed. The posted speed limit is most often too fast for the slick winter road surfaces. If you accelerate your car to, or beyond, the posted limit, you'll have very little control.

Control is the prime concern on snow. Starting is not the only thing that is more difficult in winter. Turns, lane changes and stops are all made much harder when the streets are iced over.

We often urge you to "drive ahead" and maintain proper following distances. These techniques are even more important in winter.

First, the "driving ahead." Any maneuver you must make in your car requires more time and space, so plan ahead. Watch out for cars that are entering from driveways or intersecting roads. They won't be moving fast, and you must allow them room to accelerate into traffic.

If you are planning a turn, slow down far in advance of reaching the corner. If you treat an icy road like a dry one, you'll slide around and find yourself in places you really don't want to be, like in opposing lanes, or up on curbs. It's a little like running barefoot on wet grass; when you try to turn fast, you slide and fall down.

Maintaining a generous following distance takes care of those situations in which you can't plan ahead. The guy ahead could very easily do something unexpected. He could spin out, or stop quickly (as quickly as you can on snow), or hit something. You want to keep away from him, just in case. You can't assume he knows what he's doing. Be prepared to stop suddenly, or avoid another car.

Snow fun: You can't control how the other drivers are conducting themselves, but sometimes that doesn't matter because you can get into a lot of danger all by yourself. If you go too fast you're asking for a skid and winter will probably provide one for you.

You skid when you go too fast and lose whatever traction the slick roads can give you. Skids also result from locking the wheels when you're braking.

When a skid begins, you must stop it as quickly as possible to avoid running off the road or colliding with something. *Do not* stomp on the brakes; that will lock them and make the skid worse. First, ease your foot off the accelerator. Then steer into the skid and pump the brakes *lightly*.

Steering into the skid means this: If the rear of your car is skidding to your left, turn the wheels to the left.

Allow more space between yourself and the car ahead on icy surfaces. You can't tell when he might lose traction and do a 180.

Stopping, too, requires more room than you're accustomed to allowing. Begin your slowing earlier and remember to pump the brakes if necessary.

You can buy panes of frosted glass in the store to put in a window you don't want people to see through. Glass covered with real, Mother-Nature-type frost won't allow you to see through, either. Scrape *all* this stuff off before you put the car in gear.

Remember that some places will have a "chain law" that requires you to have tire chains or adequate snow tires for trips into certain areas.

This information regarding the use of studded tires was taken from a special notice issued by the American Automobile Association. Dates refer to time periods during which studs may be used.

Alabama—No restrictions
Alaska—September 15—May 1
Arizona—October 1—May 1
Arkansas—November 15—April 15
California—October 1—May 1
Colorado—No restrictions
Connecticut—November 15—April 1
Delaware—October 15—April 15
District of Columbia—October 15—April 15
Florida—Prohibited
Georgia—No restrictions
Hawaii—Prohibited
Idaho—October 1—April 15
Illinois—Completely banned
Indiana—October 1—May 1
Iowa—November 1—April 1
Kansas—November 1—April 15
Kentucky—No restrictions
Louisiana—Banned
Maine—October 2—April 30
Maryland—October 15—April 15
Massachusetts—November 2—April 30
Michigan—State-approved "soft studs" permitted November 14—April 1; northern regions permitted October 1—May 1
Minnesota—Banned, except out-of-state vehicles may use studded tires for 30 days
Mississippi—Prohibited
Missouri—November 1—March 31
Montana—October 1—May 31
Nebraska—October 1—April 15
Nevada—October 1—April 30
New Hampshire—No restrictions
New Jersey—November 15—April 1
New Mexico—Permitted only when required for safety and stopping purposes
New York—October 16—April 30
North Carolina—No restrictions
North Dakota—October 15—April 15
Ohio—November 1—April 15
Oklahoma—November 1—April 1
Oregon—November 1—April 30
Pennsylvania—Prohibited
Rhode Island—Prohibited
South Carolina—No restrictions
South Dakota—No restrictions
Tennessee—No restrictions
Texas—Metal-studded tires are prohibited; rubber-studs are permitted
Utah—Only tungsten carbide soft studs permitted October 15—March 31
Vermont—No restrictions
Virginia—October 15—April 15
Washington—November 1—April 1
West Virginia—November 1—April 1
Wisconsin—Banned
Wyoming—No restrictions

CANADIAN PROVINCES

Alberta—No restrictions
British Columbia—October 1—April 30
Manitoba—October 1—April 30
New Brunswick—October 16—April 30
Newfoundland—November 1—April 30
Northwest Territories—No restrictions
Nova Scotia—October 15—April 30
Ontario—Banned
Prince Edward Island—October 1—May 31
Quebec—October 15—May 1
Saskatchewan—No restrictions
Yukon Territory—No restrictions

If it is skidding to your right, steer to your right. This will straighten the car. Be careful not to turn the wheel too far. If you do, you'll begin to skid in the opposite direction, or maybe fishtail. Even if you do skid in the opposite direction, stay calm. Just continue steering into each skid and pumping the brakes until you straighten out and slow down.

Pumping the brakes means applying light pressure to the brakes, letting off and applying light pressure again. Do nothing in excess, either the steering or the braking, and you will stop the skid.

The next thing to do is to continue along, at a slower speed. Skidding is unpleasant, and you wouldn't want to do it again.

For cars with front-wheel drive, of which there are a growing number, the instructions are a little different. These cars are engine-braked from the

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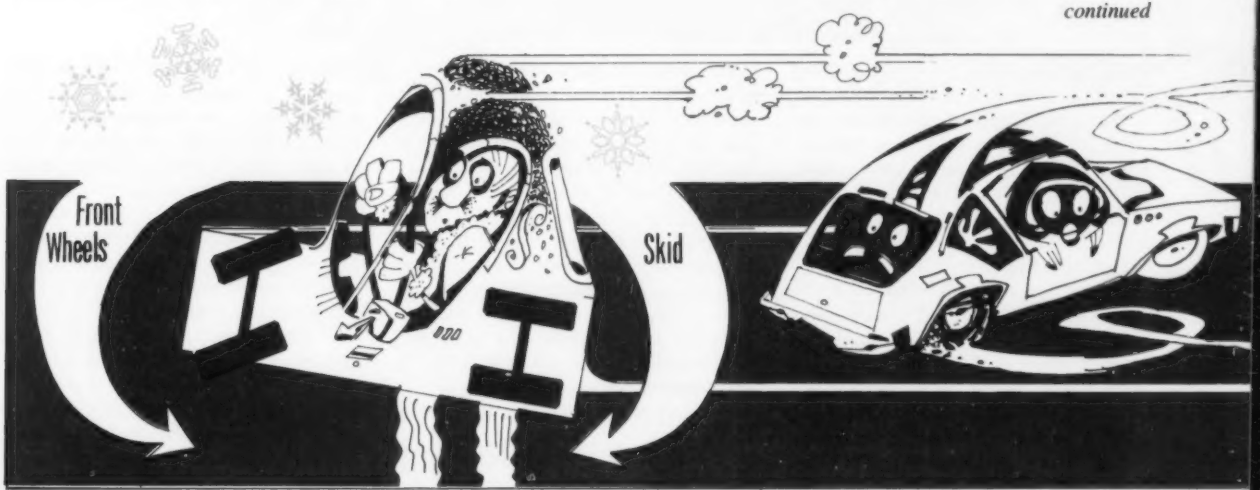


Skids aren't too bad—if you know how to stop them. Steer *into* the skid. If the rear of the car skids to the right, steer right. If it goes left, steer left.

(left) **A four-wheel-drive vehicle** will give you some extra traction in bad weather, but remember that you can get a 4-WD stuck too, if you get too adventurous. (right) **Forget** your summer driving techniques; to get started on snow, apply gentle pressure on the accelerator. Flooring it wastes your time, and it also wastes a lot of gasoline.

(left)
Getting out of a snowdrift is easier if there's someone else there to push. Applications of sand on the road, and gentle pressure on the accelerator will help, as will rocking the car. See details in the article.

(right)
Yes, it's a car under that mound of snow. Park as far off the road as you can on streets where snow removal equipment comes by. Also, find some way to flag your vehicle (with a broomstick, for example) so they'll see it.

front, and therefore it's better to keep off the brakes. The steering maneuver is the same. You can take the car out of gear, if you can do that without throwing the transmission into reverse, or else touch the accelerator enough to keep the front end ahead of the back end.

But back to planned movements. Stopping for lights or stop signs requires the same planning we mentioned before. Anticipate the stop and begin to slow down a half-block before the intersection. Simply ease off the accelerator and brake lightly, pumping the brakes if you feel any loss of control.

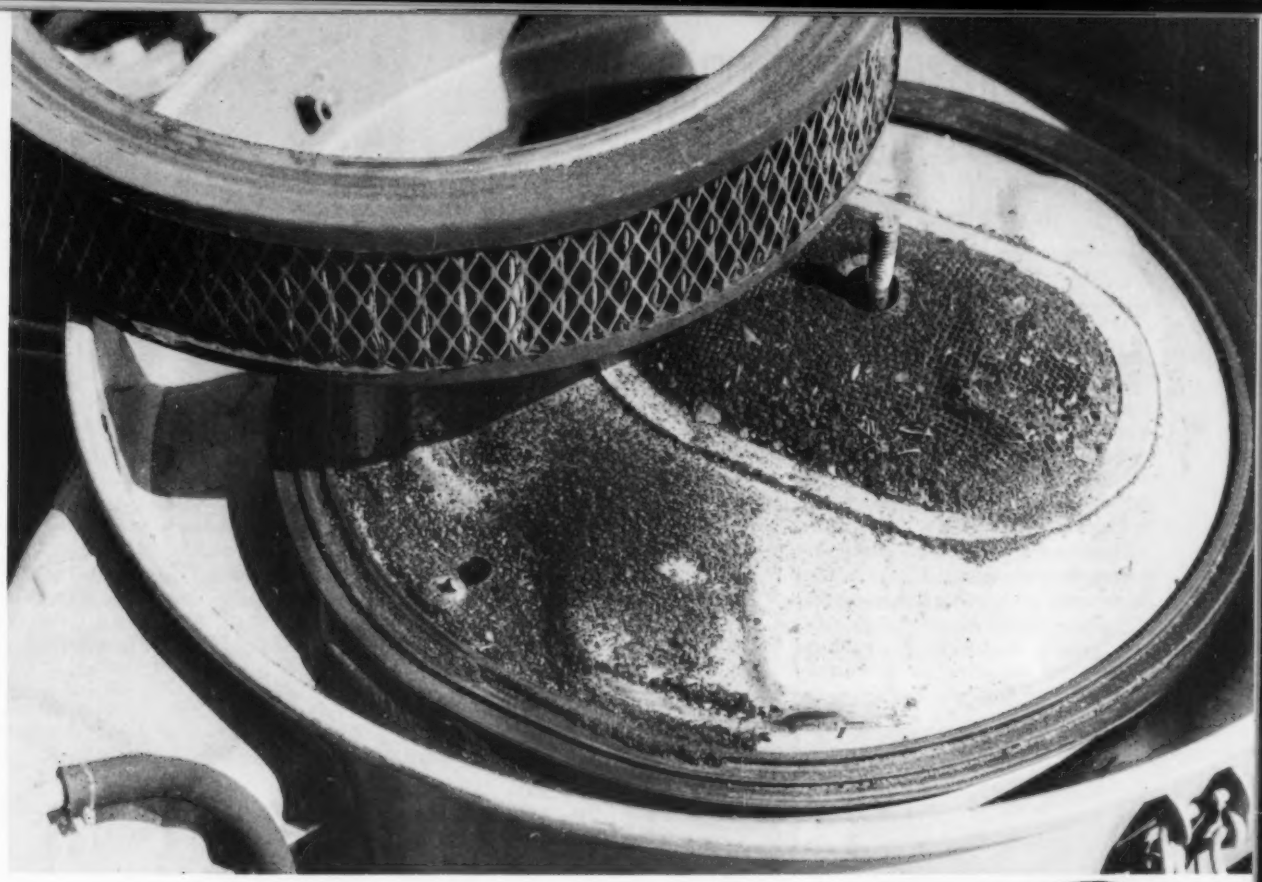
While we're on this subject, we want to remind you that more accidents occur at intersections than anywhere else. This is especially true in the winter. Be prepared for those drivers who haven't read this article – you'll see them sliding through a red light.

Snow bound: We hope it won't happen, but you might occasionally get stuck in the snow. It might happen in your driveway after a particularly bad storm, or it might happen if you slide off the road into a snow drift, or it might even happen at a stoplight. However it happens, you'll find out very quickly if you can get yourself out, or if you have to go call a tow truck.

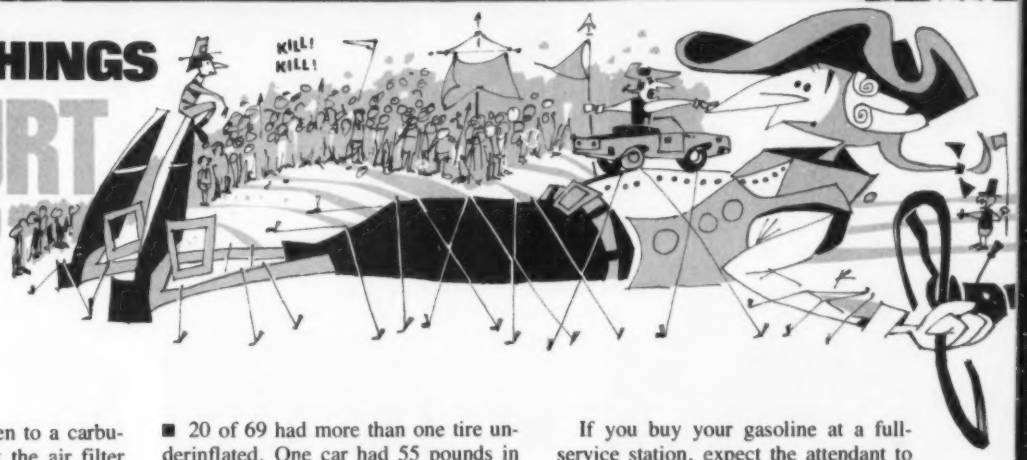
We'll assume you can get out yourself. First remember what we said about gradual starts. Don't floor the gas pedal or you'll spin the wheels and dig yourself in deeper. If the slow start doesn't work, try rocking the car by accelerating (easily, of course), first in drive, then in reverse. If that doesn't work, try using the camp shovel in your trunk to dig out the wheels and provide them with an incline to climb out of the rut. Spread a little of your sand or kitty litter in front and back of the wheels to give traction.

If you find that you are really stuck, put out the flares or warning triangles and go find a phone.

We hope you don't have to walk as far as our friend the poet did. It just goes to show that sometimes *real* horsepower is superior to automotive horsepower.



LITTLE THINGS CAN HURT YOU



This is what can happen to a carburetor if you fail to check the air filter once in a while. Because the air filter was the wrong type for the engine, dirt passed right into and through the carburetor. The result is likely to be greatly increased gas consumption and rapid engine wear.

The Car Care Council did a random check of cars in parking lots and service stations and this is what they found:

- 24 of 59 cars had dirty air filters; two had none at all.
- 20 of 69 had more than one tire underinflated. One car had 55 pounds in the right rear, 12 pounds in the left front.
- 18 of 65 were a quart or more low on oil.
- 27 of 65 had little or no windshield washer fluid. Half the cars had wipers in only fair to poor condition.
- 20 of 41 had corroded battery terminals.
- 18 of 54 were low on coolant.

If you buy your gasoline at a full-service station, expect the attendant to ask if you want him to check under the hood. If he doesn't, you request it. Same with tire pressure. You are entitled to this by paying a few cents more for the gasoline than if you pumped it yourself. Any argument, take your business someplace else.

If you pump your own gas, learn to do the simple checks of fluid levels, battery terminals, hoses, wiper blades, and tire pressure. And don't neglect your oil changes.

HYPOTHERMIA
give it more RESPECT!

Of course it is cold; it's winter. Yeah, and that's also why it is wet. The wind? Well, we just made it worse by flying along on this motorcycle. So where are we headed? We are headed for hypothermia. No, hypothermia is not the insulated aquarium in Frostbite Falls.

Hypothermia is the loss of heat that lowers the temperature of the body's inner core. It results in uncontrollable shivering. Cooler blood stiffens muscles, causing clumsiness. Cooler blood hitting the brain impairs nerve-to-muscle coordination, aggravating clumsiness; and it impairs all mental processes as well. Especially judgment. The victim doesn't realize what a dangerous situation he's in. Then there is a fairly rapid descent into unconsciousness and death. Mountain climbers call it "the killer of the unprepared." Motorcyclists should pay it more respect.

One of the body's first responses to cold is constriction of the blood vessels of the skin to decrease heat loss. The skin then insulates the body's inner core areas. The skin also becomes numb and muscles near the skin weaken, particularly in the hands. The hands are then useless for fine or coordinated movements. On motorcycles this can spell disaster.

The body produces heat from food and muscular activity. As a muscular activity, shivering is about the same as slow running. However, shivering consumes much energy and leads to exhaustion, which contributes to hypo-

Lynn first showed us the latest in motorcycle gloves. We had our choice of two pairs, both well insulated yet providing plenty of grip for the controls.

Next she brought out a Throat Coat which can be stuffed inside our jacket and either up under or around the lower portion of the helmet.

"How about a ski mask?" she asked. "They offer excellent face protection for either open-faced helmets with goggles or behind face shields." The only problem with the old stocking cap that stretches down over the face with a couple holes for the eyes is that it doesn't fit under the helmet we purchased last summer.

all weather MOTORCYCLING

This is a simple rain suit. It keeps the water and wind out, but you must dress warm under it during colder weather. It is a very bright color and, although it doesn't show in this picture, there are reflective stripes on the back.

A step above the rain suit is this warmer two-piece outfit. It too is a very bright color and has reflective tape on various portions.

And when it gets really coooold, wear a snowmobiler's suit. Be sure your boots will keep your feet warm while gripping the pedals, too.

For years there may have been all-weather motorcycles, but the majority of the operators were only fair weather riders. Today that is not the case. Today the costs of motor vehicle operations have risen to such a level that many people operate their two-wheeled machines in weather that can only be described as bad. Bad for the rider's physical comfort. And really bad in terms of safety.

Safety hazards facing winter motorcyclists include: seeing and being seen; getting cold; dealing with wetness of both self and the road; and battling the wind.

In the extended hours of darkness lurks the extreme danger to motorcyclists. Many people fail to see motorcyclists in clear, dry weather. (So they say, anyway. We won't argue about their abilities or their attitudes.) Bad weather multiplies this disastrous human failing. Because of this, experienced cyclists develop the attitude "other drivers cannot see me. I am invisible." Riding as if invisible and keeping one's vulnerability in mind has kept many an experienced rider out of harm's way.

However, resigning themselves to being invisible doesn't mean motorcyclists stop their efforts to be seen. Riding in the darkness of night or bad weather dictates wearing light colors and, where possible, reflective material. Reflective tape on the machine as well as the rider's helmet increases visibility tremendously.

The darkness limits the rider's ability to see as well as be seen. During the summer, the motorcyclist can see as far as the horizon. But the shorter days of winter mean later morning and earlier evening darkness. Now visibility is limited to the length of the headlight beam. Of course, bike riders want their headlight aimed to give them the best beam to see and be seen with.

An unnecessary limit placed on seeing comes from wearing tinted face shields or goggles. Only clear lenses should be in front of the eyes during limited light situations. Another lens problem is scratches. They distort

continued

thermia.

There are external sources of heat for the body, too. These include the sun, fire and hot liquids. So that stop for a cup of coffee, tea or hot chocolate can be a real life saver—and we don't mean that as a figure of speech.

The body's heat loss is part of its self-cooling system. The heat is lost via *radiation, conduction, evaporation* and *convection*.

In the case of *radiated* body heat loss, at 40 degrees Fahrenheit, almost half the radiated heat is lost via the head. At five degrees this increases to three-quarters. Your helmet does more than keep outside forces from denting your brain pan; properly fitted, it keeps the heat loss down. As the old saying goes: If your feet are cold, wear a hat.

Heat is also *conducted* away from the body. Metal, such as that used for the handlebar controls of a motorcycle, is such a rapid conductor of heat that bare hand contact can leave frozen skin on the metal or cause frostbite. Liquids, especially gasoline, are also dangerous conductors. Gasoline will of course remain a liquid far below the freezing point of water.

Evaporation heat loss occurs on the skin (sweat) and in the lungs (water vapor). If this moisture is trapped it can freeze, so evaporation must be helped. This is one of the reasons why numerous layers of clothing are better than a single layer—the moisture can escape into the outer layers of clothing rather than being trapped next to the skin.

Convection or heat lost because of circulating air next to the skin, is another reason for the layers of clothing. The loose first layer retains warm air next to the skin, reducing the heat loss.

Cold weather motorcycling requires riders to eat well, drink hot liquids, avoid over-taxing themselves and dress to stay dry and insulated from the wind.

Having gone to Dale's Modern Cycle in San Bernardino, Calif., with Kay (a novice motorcyclist) to buy summer gear for the May 1980 DRIVER, we returned there for some winter items.

Bad weather motorcycling requires protection from the elements as well as cautious vehicle control. This pair would stand a better chance of being seen if the headlight were turned on.

images and refract light into troublesome glare. Extra special care must be used when selecting eye protection for bad weather riding because of problems associated with lens-misting and steam.

The cold and wetness of winter add to the dangers of bad weather motorcycling. Of course, the rider needs protection from the cold and wetness (see "Hypothermia: Give It More Respect" in this issue of DRIVER), but portions of a motorcyclist's foul weather gear must also perform other functions. For example, gloves and boots must aid the rider in gripping the controls.

Control is the name of the game in bad weather cycling. Anything that interferes with control spells disaster. The simplest rule for avoiding tragedy and maintaining control is:

Excessive speed requires excessive braking.

Rain is the most common problem. When it first starts falling, the road surface becomes extremely slippery as the water mixes with the oil, grease and dirt. After a while the rain should wash this film off, but by then the water is so deep the tires can't grip. Rain also makes other road hazards even more dangerous. Wet paint strips and metal gratings are very slippery.

Without following too close, one of the best places to ride in the rain is in the tire tracks of other vehicles. Meanwhile, one of the worst places to ride is in the center of the lane where the rain is mixing with car drippings and road grease to form the slickest mess possible.

Another area that has caught many a motorcyclist off guard is the gasoline pump island. These smooth concrete areas provide absolutely no traction for tires when wet.

Of course, the best way to avoid getting into trouble is by riding at slower speeds. Other basic motorcycling rules also apply to riding in the rain, but with even more emphasis. For example, don't change directions abruptly. And develop a habit of checking traffic before changing directions along with signaling your intentions.

When encountering a hazard in the rain, your actions should be pretty much the same as those actions used in dry situations. Do your braking, deceleration and downshifting before actually getting to the hazard: Take the obstacle straight if you can't safely steer around it. When riding over an obstacle shift your weight as far back as possible. Then rise off the saddle placing your weight on the pegs. Don't accelerate until the rear wheel has passed the obstacle.

Wet road conditions require that motorcyclists corner as near perpendicular as possible.

If a skid should develop, keep the wheels turning. Overbraking and locking the wheels only makes the skid worse. Braking should be done only while the bike is upright. At very slow speeds the rider can use his feet to keep the bike from falling.

Strong head winds reduce the motorcycle's actual speed and produce a wobble. Tailwinds greatly increase the speed. But the most dangerous is the crosswind. The rider tends to compensate for the crosswind by leaning the machine. Then, when the wind suddenly stops because of a building, fence, tree or other windbreak, the motorcycle will veer. Of course, the same thing happens when the motorcycle passes the windbreak into the crosswind.

Probably the worst problem facing motorcyclists in the cold is *attitude*, the attitude to drive faster than is safe, to hurry up and get the ride over. The result is that the ride is over long before you get to where you were going.

Bad weather biking doesn't have to be a battle. Planning for your own comfort, thinking about possible upcoming hazards, developing riding skills and using caution can help a fair weather rider through bad weather times.

Additonal hours of darkness during the winter mean increased invisibility for cyclists. As you see, it is much easier to spot the first rider using reflective tape on his outfit and machine than it is to locate the second rider who has forgone such nighttime protection.

happiness is:

Driving past open service stations.

Being able to anticipate what the traffic ahead will do so you're prepared for it.

Carrying at least one person in your car for company.

Brakes that work.

A 12 percent loan . . . oops, the Fed hit again; a 15 percent loan.

Seeing a child properly restrained.

Being able to do more than the Backyard Mechanic and knowing more than Double Tech.

Seeing Smokey and not worrying that he might come after you.

Stopping drinking before you've had too much.

how are

Do you know the three items of automotive maintenance most frequently overlooked by drivers? According to mechanics in repair shops, first is transmission services, then battery cables, and third, shock absorbers.

Mechanics say motorists tend to ignore the condition of their shock absorbers because shocks wear out gradually, so the loss of roadability and comfort goes unnoticed. The result is a combination of symptoms that can make it difficult to control your car in turns or when stopping on a rough road. The driver may notice the car wallowing or leaning somewhat when changing direction at highway speeds. It may nosedive when stopping quickly and bounce when driving. Or he may notice the car's rear end bottoming out (the springs hit bottom) when hauling extra weight or backing down a driveway.

The traditional way to check the condition of the shocks is to bounce the car up and down. If it rocks more than twice when you release it, be suspicious.

Shock absorbers work somewhat like the tubular device that keeps screen doors from slamming. They are telescoping tubes filled with hydraulic fluid. Inside the tube is a piston with several small openings through which the fluid passes as the piston moves in and out.

The tube is connected to the car's suspension, which moves up and down with irregularities in the road. The other part of the shock absorber is connected to the body or frame of the car. Motion of the wheels is controlled by

Here's a shock absorber that's out of business. The hydraulic fluid which is essential to its operation has leaked out. Since the fluid can't be replaced, a new unit must be installed. Replace shocks in pairs or sets of four so that the car's handling characteristics are not adversely affected.

the plunger-through-fluid action of the shock absorbers. As the car's spring is compressed because of a wheel passing over a bump, for example, the shock absorber telescopes, and the piston is forced through the fluid at a rate controlled by the size of the holes in the valve. The same action controls rebound.

You can check the shocks when the car is up on a lift for servicing. Leakage (oil on the tubular parts) is the most common sign of wear. Since shock absorber fluid is sealed in and cannot be replaced, leakage means it's time to think of replacements. But leakage is not the only sign of failure. The mounting bushings can become worn or the mounts can break.

The Car Care Council says it is wise to replace shocks in front and/or rear sets, not singly. On older cars, consider a heavier duty shock absorber to help restore the new-car ride. Original equipment shocks are designed to accommodate the stiffer components of new cars. As suspension parts limber up with age, a firmer shock absorber action is better.

New shocks can make a real improvement in your car. But remember they cannot compensate for excessively worn suspension parts or wheels out of alignment.

Your Shocks?

AFTER AN

If you are the first person to arrive at the scene of an accident, you have two choices. Either drive on to find a telephone and summon professional help, or stop and render assistance yourself. In some cases, immediate help can save lives.

If you stop, park beyond the accident site as far off the road as possible and turn on your car's emergency flashers. Don't park across the road.

First, reduce the chance of fire by turning off the ignition on any damaged vehicle. Don't move anyone who is injured unless there is immediate danger to the person, such as fire. Keep in mind that people involved in traffic accidents could have neck or spine injuries and moving them could cause paralysis or even death. If the victim is not breathing, start mouth-to-mouth resuscitation immediately or find someone who can.

Stop any bleeding by applying direct pressure. A person can bleed to death in just a short time. Press directly against the wound with the cleanest cloth or pad available. You can use your hand if no cloth is available.

If you are busy giving first aid, send the next person who stops to call for help. The caller should tell the location of the accident, how many persons are involved, and what kind of help is needed. The caller should stay on the line a moment to confirm the information given and to answer specific questions.

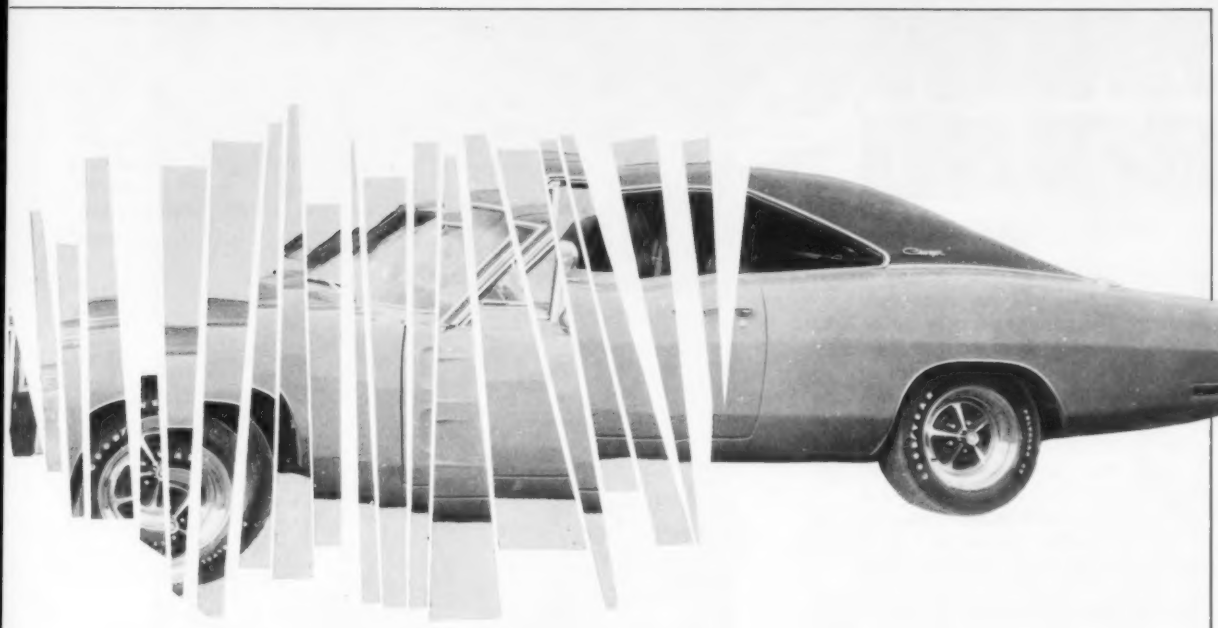
While waiting for professional help, protect the victim from shock by keeping him or her lying down and as comfortable as possible. Don't smoke and don't let anyone else do so. There is likely to be spilled gasoline on the ground which can be easily ignited.

If you are involved in the accident, these same guidelines apply. But in this case there is more for you to do.

If your car is still on the roadway where it is in danger of being struck by oncoming cars, quickly get out and get yourself and others to safety on the side of the highway. At night, set up flares or reflective triangles to alert other traffic. It's usually a good idea not to move the vehicles immediately following the accident because the police may want to record the positions of the cars. Common sense must prevail here, however. The main objective is that no further injury or damage occur. If vehicles must be moved to avoid such danger, then do so if you can.

Exchanging information: The following information should be exchanged at the scene of the accident:

- Operator's license number of each driver.
- Drivers' and passengers' names, addresses and both work and home phone numbers.
- Whether the drivers are the owners of the vehicles. If not, get each owner's name, address and phone number if possible.



ACCIDENT SCHOOL

- License plate numbers, year and makes of the cars involved.
- Names, addresses and telephone numbers of insurance companies. *Do not* discuss what type of insurance coverage you have.
- If there are witnesses, get their names, addresses and phone numbers. In the event of a legal dispute, your passengers may not be credible witnesses to the accident.

After you have all this information recorded, write down whatever you can remember about the accident while the details are fresh in your mind. You will want to make notes about the condition of the pavement, the weather, status of traffic lights, visibility, and the approximate speeds of the vehicles. But don't talk to others about these details. You want a record of your own observations. Under no circumstances admit that you were at fault even if you think you were. You may find later that you actually were not and your "admission" has come back to haunt you.

If the police arrive on the scene, ask them if there will be a written report and where you can obtain a copy. (Most police stations provide them for a few dollars.) You will want to write down their names and badge numbers as well as the locations of their police departments or precincts.

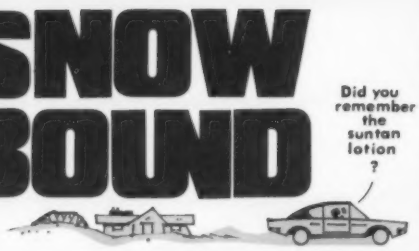
Later. As soon as possible, you should call your insurance agent. If the police did not show up at the accident scene, it is possible you will be required to file a report with the state's department of motor vehicles. Such a report is usually required if any injury was sustained in the accident or if property damage exceeds a certain level, usually about $200. Your agent probably has the report forms and can assist you in filling them out. If you're involved in an accident in other than your own state, you must follow the procedures of the state in which the accident occurred.

If you wish to collect from the other driver's company, discuss it with your agent and follow his advice. He cannot settle with the other company on your behalf but he can give you valuable guidance as to correct procedures.

Don't panic. If you can keep a clear head at the scene of an accident, whether you are involved as a driver or not, it will be of great value. Don't panic. Don't allow yourself to be dragged into an argument. Emotions run high at the accident scene. Should you be a party to the accident, make your notes carefully. Once people have gone on their ways, you may find it impossible to learn necessary information. Keep copies of any papers you give to your agent or the police.

It is perfectly normal to feel anxiety at the accident scene and afterward. But your mind should be calmer if you follow these guidelines.

SNOW BOUND



In our article on winter driving in this issue, we told you some techniques for handling minor emergencies. But what about the *non*-minor emergencies, like getting stranded or getting stuck in a snow drift so badly you can't dig out? If you're far from help, the emergency becomes a matter of *surviving*. Almost every winter you'll read stories in the papers of freak blizzards that close down an entire city, or even most of a state, as in a snow storm in the Rockies a couple of years ago. And you'll often hear of people who were stranded and failed to survive.

If you live in an area where it's possible to have such a storm, the best thing you can do is to check the weather and road conditions with the law enforcement authorities before you make a long trip, and then prepare for the possibility of being stranded for as long as several days.

Even if your area isn't subject to heavy blizzards, remember the possibility of simply running off the road in a sparsely-traveled rural area. Perhaps someone would drive by in 20 minutes. Perhaps you wouldn't see anyone until the next day.

Survival kit: For the ordinary winter automobile gear, look at our driving article. For survival gear, read on.

First we recommend you have plenty of warm clothing. In the trunk, pack blankets and/or heavy overcoats, overshoes with high tops, gloves or mittens, several pairs of wool socks. You'll need these, whether or not you're able to run the car's engine for warmth.

The Minnesota Para-Rescue Team and the Minnesota AAA recommend the following as well: A face mask (like a ski mask), first aid kit (you should have one of these at *all* times), waterproofed matches and candles, a small knife, safety pins, aspirin, 40 to 60 cents in dimes, compass, flashlight with spare batteries, paper towels, facial tissue or toilet paper, and a supply of food.

This car may be in too precarious a position for use as a shelter. However, all the windows and doors are intact and it would be easier to use the car than to build a shelter out of the stubby native scrub. You should brush the snow off the side, though, so the car is more visible to searchers.

What food? Primarily things that are rich in energy, but will not spoil quickly. Suggestions: honey, semi-sweet chocolate, instant coffee or mocha mix, raisins or other dried fruit in small packets, candy bars (heavy on the chocolate) and gum.

A few other things you might think about: a winter survival manual, hatchet, tent or shelter half, portable radio tuned to the weather band, signaling mirror or hand-held mini-fog horn and a small caliber handgun and ammunition – if you are trained in its use.

Shelter: Your first concern when you realize you're stranded should be shelter. In most cases, your car will be your shelter. It will provide you with protection from the wind, and it will also provide other survival items we'll get to later.

Further, if you stay with the car, you will make the job of searchers easier – when they find the car, they've found *you*.

So stay with the car. Also, don't get far from it when the snow is falling or the wind is blowing. You could easily lose sight of it and freeze to death.

Your car will provide you with some insulation from the cold if it can be completely closed up. If a window is broken, plug it with something to shut off the air flow. Inside, your body heat will probably keep the temperature at a survivable level.

If the outside temperature is so cold that you have to run the car's heater for warmth, you must insure that it is safe to do so. Many people die from the cold when they're stranded, but many people also die from carbon monoxide poisoning.

First, check to make sure the exhaust system has no leaks, and that the car isn't leaking gasoline. Clear the snow away from the exhaust pipe, so the exhaust can escape. Also, clear the snow away from the front of the car, so the radiator has adquate air flow. If the air is blocked off, the engine will overheat very quickly, even in the extreme cold.

continued

(right)
Make a copy of this chart and paste it inside your trunk or survival kit. These symbols do not show up in nature and are highly conspicuous to airborne searchers. Signals should be displayed in a clearing and be as large as possible. Even if you just stamp them out by walking the area, they are visible at quite a distance.

If you have to leave the car, make a shelter out of whatever you can find. The car's interior panels and wiring can be useful, as can the carpeting. Use pine boughs or some fabric to keep yourself off the snow.

Then, before you run the engine, open the *upwind* window to allow adequate ventilation and prevent carbon monoxide poisoning.

Now that you've provided yourself with shelter, and you have the dried foods packed away already, your concern is with having water. The supply – ice and snow – is all around, but *do not* eat snow or suck on chunks of ice for water. In its frozen state, the water could lower your body core temperature to a dangerously low level, and loss of body heat is one of your prime concerns.

Melt the ice and snow some way. Start a fire and melt some in a hubcap, or let the sun melt it. Put some ice in a rag and keep it next to your body and then suck on the rag.

First aid: Your first aid manual and your survival manual will be very valuable. They will give you more detail than we can here, but here are a few basics:

- Keep injured persons warm and dry. Keep the victim inside a shelter, in a sleeping bag if possible.
- Warm food and liquids are preferable for conscious victims.
- Avoid alcohol. (This applies to everyone, not just the injured. Alcohol lowers your body temperature by increasing the rate at which the body loses heat.)
- Improvise heat packs by wrapping hot stones, sand, metal, etc., in fabric, but insure the victim is not burned. Place hot packs at the small of the back, between thighs, under armpits, on stomach, or on soles of feet.

Frostbite – the freezing of a part of the body – is a big problem in winter survival. The first sensation of frostbite is usually numbness rather than pain. Frostbite will show up as a grayish or yellow-white spot on the skin. If you're in a group, keep an eye on each other for protection.

Get the frostbite victim into a heated shelter as soon as possible. When only the surface skin is frozen, it becomes spongy to the touch, and can be warmed by body heat. Place a warm hand or palm against the skin until thawing is accomplished.

If the freezing affects deeper layers of skin, it must be thawed quickly. Warm water (between 105° and 110°F) is best for this purpose. If warm water is not available, thaw the frozen body part with heat packs inside the clothing. Don't let the part freeze again, or tissue loss will likely result.

If the frostbite is accompanied by breaks in the skin, apply a sterile dress-

ing, but do not use any ointment.

Never forcibly remove frozen shoes or mittens. Place them in warm water until soft and then remove them gently.

Survival tools: Now that we mentioned the biggest worry of cold, we'll tell you a few things your car can do for you besides supplying heat.

Gasoline or oil can be put into a hubcap and ignited—very carefully, with a long stick. This will provide black smoke to use as a signal, heat for warmth, and, used with a second hubcap, a stove for the melting of snow for water.

The spare tire, removed from the car, deflated, and set afire, provides dense, black smoke for signalling, and some heat for comfort.

Hubcaps make good pots and pans, plates, shovels, noise makers, toilets, reflectors, and stoves.

Broken mirrors can be used as signalling devices, knives, and fire-starting devices.

The hood or trunk can form part of a shelter, or be used as a big frying pan (if you have anything to cook), a signal (both visual and audible), and as a travois or sled to carry injured people or firewood.

Wires ripped from underneath the hood or dash after your battery is dead can be used for ropes to form snares or for pulling the hood. They can also be used to tie things together for a wind-resistant shelter.

The seats can be used to keep you off the ground in a snow shelter, if you have to abandon the car.

The interior panels, carpeting, trunk floormat and headliner can be burned for warmth as well as for smoke signals. Burn these only in open areas, because they can create poisonous gases when burned. They can also be used for shelter walls or floors.

Chrome parts can be used as signalling devices.

Signalling: We've mentioned using the shiny parts of your car to create mirrors, and lighting fires to get smoke, but there are some things to remember about each method:

You need to be able to aim your mirror, so practice before you need to signal rescuers. If you don't have a mirror, poke a hole through a can lid, or something else shiny, with a nail or screwdriver. Sight through the hole and practice hitting a tree with the reflected sunlight.

Smoke from a signal fire will rarely go straight up. It may go up about 150 feet and then disperse, or it may hang around in treetop air currents. Set your signal fire in an open area, where the color of the smoke will contrast with its surroundings.

Something large and bright colored, like the hood of your car or brightly-colored cloth, will make an excellent marker. Place it out in the open where it will be easily seen by searchers. Or you can lay tree branches on the ground to form straight lines. Since straight lines don't normally occur in nature, they will signal rescuers. If nothing else, get out and tramp down the snow to make your straight lines.

Above all, keep a positive attitude. Don't waste time worrying about *not* being found. Keep busy doing things like building fires, making signals, trapping animals for food. Anything positive you can do will make you more comfortable and confident, and it'll make the time go faster until you're found by searchers.

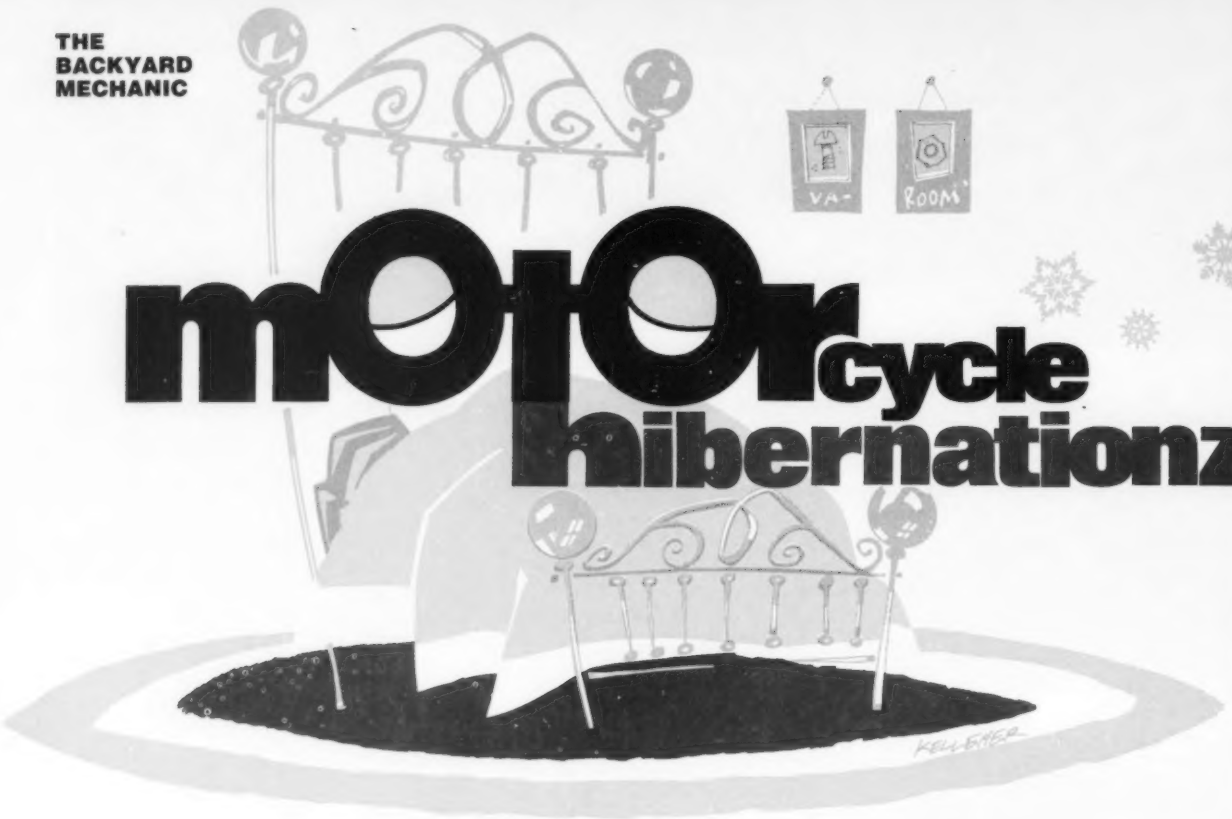
If your car happens to wind up upside down, it can still be an adequate shelter. If, however, the entire weight of the car is resting on the roof, it should be braced well with logs. You could use pine boughs to insulate the roof, which is now your floor.

ESTIMATED ACTUAL THERMOMETER READING (°F)

WIND SPEED IN MPH	EQUIVALENT TEMPERATURE (°F)											
	50	40	30	20	10	0	−10	−20	−30	−40	−50	−60
calm	50	40	30	20	10	0	−10	−20	−30	−40	−50	−60
5	48	37	27	16	6	−5	−15	−26	−36	−47	−57	−68
10	40	28	16	4	−9	−21	−33	−46	−58	−70	−83	−95
15	36	22	9	−5	−18	−36	−45	−58	−72	−85	−99	−112
20	32	18	4	−10	−25	−39	−53	−67	−82	−96	−110	−124
25	30	16	0	−15	−29	−44	−59	−74	−88	−104	−118	−133
30	28	13	−2	−18	−33	−48	−63	−79	−94	−109	−125	−140
35	27	11	−4	−20	−35	−49	−67	−82	−98	−113	−129	−145
40	26	10	−6	−21	−37	−53	−69	−85	−100	−116	−132	−148
(Wind speeds greater than 40 mph have little additional effect)	**LITTLE DANGER** (for properly clothed person)				**INCREASING DANGER**			**GREAT DANGER**				
					Danger from freezing of exposed flesh							

This chart will give you an idea of what you're up against when you're stranded in the winter. Shelter from the wind is of the utmost importance.

motorcycle hibernationz



To the delight of the skiers, sledders, ice skaters and snowmobilers, winter is almost upon us. Motorcyclists probably don't share their joy unless they've developed a taste for one of the white sports, also.

Winter may not be so bad for those cyclists in the warmer climates provided they make some adjustments in their machines and dressing habits (see other articles in this issue). But for those who live where snow and ice are part of the winter scene, snowmobiles are coming to life again (see January '80 DRIVER) and motorcycles are looking for a spot in the garage for hibernation.

This is not to say that you can't ride motorcycles on snow and ice – let's just say that without years of experience, riding under such conditions is a real pain. After all, four-wheeled vehicles have enough trouble under these slick conditions. So, if you do live in snow country, why not put your bike away for the winter and settle down with a good book in front of a warm fireplace?

Just roll your motorcycle into a corner of the garage, turn off the gas and remove the key. That's all you have to do – unless you want your machine to start in the spring. It'll be a little hard because the battery will be shot, the engine rusted, the carburetor gummed, on-and-on. But if you follow a few easy storage tips, you'll have a runable machine when spring fever strikes again.

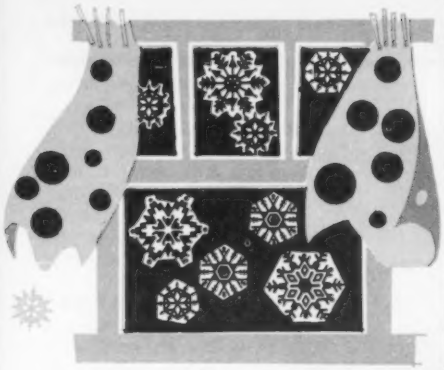
First of all, give the machine a thorough scrubbing down. Don't direct high-pressure water streams at air cleaners, switches or other sensitive areas. There are numerous specialized cleaners for washing engines and related parts. Just brush or spray them on, let them set and rinse off with a garden hose. Use cleaning solvents only for oily or greasy parts. Gasoline's extreme fire hazard makes it a no-no as a cleaner. Besides, it's not cost-effective. And make sure your work area is well ventilated when using any solvent.

You'll also want to touch-up any paint nicks and scratches.

Electrical systems are especially susceptible to problems arising from moisture during the winter. Clean all corroded/rusted electrical connectors and grounds with a wire brush, spray on preservative oil and tape with electrician's plastic tape. Waterproof tight-fitting rubber spark plug boots are a good idea. Many stock spark plug caps trap water and short out the plug.

Go completely through the electrical system and tape all loose wires and harnesses.

Remove the battery, wash the exterior with a bicarbonate of soda solution and fill to the proper level with distilled water. Clean the terminals and bring the battery to a full charge with a one- or two-amp trickle charger. Store the battery on a wooden shelf wrapped in a plastic bag. If the battery is not in the machine there will be very little



-Z-Z-Z

chance of acid spilling onto the bike's parts should the battery case crack. Never leave a battery on concrete surfaces, it will go dead.

If you do put the battery back into the bike during storage, keep it in the plastic bag. Also make sure the battery overflow tube is not kinked and is long enough to dump excess acid onto the ground, not the bike. Leave the ground terminal disconnected during storage.

In either case, charge the battery at least once a month.

Next, make a funnel out of paper and tape it to the end of each cable. Pour a small amount of light oil into the paper funnel and let it sit for several hours. The oil will seep down, lubricating the entire length of the cable. You'll also want to do all normal lubricating maintenance at this time.

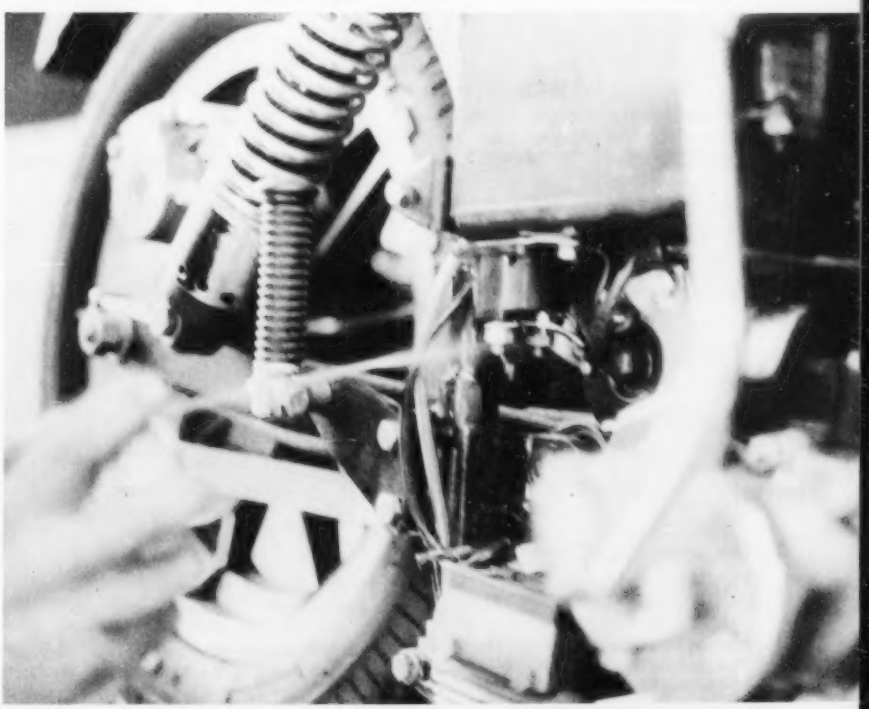
Remove the carburetor float bowl, empty it and thoroughly dry out the carburetor before replacing the bowl. If you are thinking of riding the machine during the winter, check the bowl for water, clean the bowl and reassemble the carburetor.

Whether you are storing or winterizing your machine, now is the time to insure the cycle is in top running condition. Give the motorcycle a complete tune-up from timing to brake adjustments (see November and December 1979 DRIVER). Then when the weather improves you'll be ready.

Next remove the fuel tank, drain it and the fuel lines. Put a ½-pint of oil in the tank, then turn it around and over until all the inside walls are coated. Drain out the remaining oil. This prevents condensation from rusting the

continued

Start winterizing your motorcycle at the wash rack with a complete bath. Be careful not to direct high-pressure water against air cleaners, switches or other sensitive areas.



Cleaning electrical connectors and grounds can be easy with pressure cans of contact cleaner. Just spray it on. Be careful around painted surfaces since many contact cleaners eat paint.

inside of the tank and petcocks. Because condensation is a constant cold weather problem for those riding in the winter, always keep the fuel tank full.

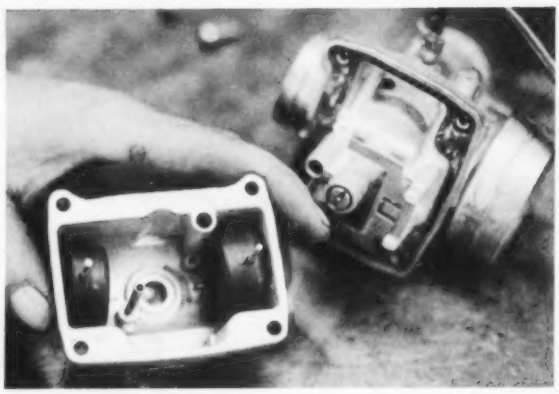
Remove the spark plug(s) and squirt a small amount of oil into the cylinder(s). Kick the engine over 10 or more times and replace the plug(s). Kick the engine over several times every few weeks to keep internal parts free and oil coated.

The final ounce of protection comes by spraying chromed and polished metal surfaces with preservative oil before covering the motorcycle with a tarp. At all costs short of moving the family out, store the bike inside. Set it on blocks to lift the tires from contact with the floor. This will prevent tire dry rot. Spray rubber and vinyl parts with a silicone preservative.

If you are planning on riding in the colder weather, when changing the oil put in a lighter-weight engine oil. And since the engine will be operating at a lower temperature, change to a hotter spark plug.

Riding is no fun when you're freezing, so choose your winter riding apparel with warmth, comfort and protection in mind (see pages 10 and 11). And don't overlook the chill factor (see page 21).

After removing, cleaning and filling the battery, put it on a one- or two-amp trickle charger before storing. Recharge it at least once a month.



Carburetor float bowls should be emptied and thoroughly dried out before putting the bike away for the season.

Remove the fuel tank, drain it and the lines. Then pour in some oil and swish it around until all the inside walls are coated.

Squirt a small amount of oil into each cylinder and kick the engine over 10 or more times before replacing the spark plugs. Kick the engine over several times every few weeks to keep internal parts free and oil coated.

DRIVER thanks Bob Amaral of Dale's Modern Cycle, San Bernardino, Calif., for his assistance in the preparation of this article.

tteecc!h!h DOUBLE TECH Q A

With TSgt RON LATHROP

I want the most economical transportation available. What do I buy?

The most economical transportation is as varied as the number of people who've asked that question. The November 1980 DRIVER Magazine will be devoted to helping each individual define their economical transportation and how to find it.

I need to get a set of snow tires for my station wagon. What should I look for? Since the vehicle has radial tires, do I have to get radial snow tires?

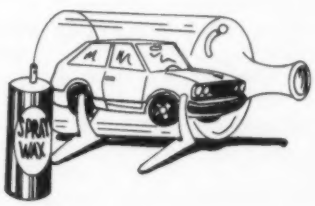
As with defining economical transportation, telling you what snow tire suits your needs would require a full issue. Therefore, the January 1981 DRIVER Magazine will cover tire shopping.

Because of different characteristics, tires on the same "axle" have to be identical and the rears must match each other. It is best to keep both ends of vehicle on similarly constructed tires for the same reason. There have been many uncomfortable situations turned into accidents simply because unmatched tires upset the vehicle's ability to cope with an emergency situation. It is not unusual, for example, to find vehicles off the road after a fresh snow fall solely because when the driver first turned the wheel or applied the brakes, the vehicle swapped ends. Sudden direction changes (turning, applying the brakes) shift tire loads which cause different effects with different tires. And when these different effects occur during an emergency maneuver, it is usually more than most people can handle. So, by all means, match radial snow tires to the radials on the station wagon.

You keep mentioning shop manuals, I wrote to my manufacturer only to get a letter stating that they could give me one by using the office copy machine, but that it would be very expensive. Do you have another idea on what I can do to get information about my 10-year-old car?

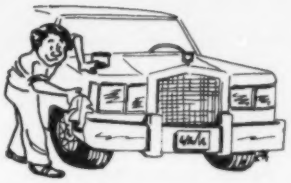
Pick up almost any of the major automotive magazines and look at their ads from auto book companies. Very often you'll find something in their manual section that covers your vehicle. True, the manual may cover 10 to 25 years, but in all honesty, the mechanics don't change that much over the years. The step after that is a general manual that covers several makes and models for numerous years. These general

manuals serve most backyard mechanics faithfully. Additionally, because they are printed several years after the vehicles were built they often include many helpful hints and trouble-shooting tips the manufacturer didn't know about when he produced the vehicle and original shop manual. Besides, they are good buys, as they can also be used for other vehicles.



In the article "How to Make Your Car Last Forever" you mention silicon spray and wax. What are you talking about? Are you referring to those products advertised for cleaning everything—protecting, preserving and beautifying? They all seem to come in the same size and shape plastic bottle, right?

Right.



I have a 1971 luxury car that I picked up for $1,000. The car is in cherry condition and I would like to keep it that way. The car has 107,000 miles on it and as best as I can figure, I get 12 to 13 miles per gallon average. I plan to go overseas and I won't take the car. I plan to have it completely overhauled—engine, trans and rear end. I feel that rebuilding the engine would give me better gas mileage due to the increased compression. So how about giving me some ideas on how you would do it? Like domed pistons or chrome rings or electric ignition, etc. The carb is stock and I plan to put one of those gas savers on it. Rebuilding would increase jet size thus increasing gas consumption.

Pardon me, but I have to let the applause for your sincere efforts to conserve die down before I can hear myself think to answer your question. To start with, rebuilding should improve your fuel economy as you said because of the increased compression—or the other side of the same coin, because the fuel-air mixture isn't leaking past the rings. There has been much said and written about the numerous improvements that can be made internally to an engine to increase economics of operation. Most of these are, of course, directed at getting free horsepower. Unfortunately, after all is said and done, the only way to know for sure if fuel economy is increased is to measure the final product. A trial-and-error-type testing of all the possible internal improvements and various combinations is beyond most budgets (including some manufacturers'). Additionally, most drivers find that if they have more horsepower at the command of their right foot, they tend to demand it perform more often and thereby decrease their overall fuel economy.

You could, of course, bolt on and install all kinds of aftermarket parts that may or may not have extensive testing to back up advertising claims for huge

continued

double tech

continued

percentage mileage increases. But let's say for the moment that a certain aftermarket manufacturer claims a 10 percent increase in mileage by using his product. With your vehicle that would, if true, mean a single mile per gallon at the very best. Is that worth a several hundred dollar additional outlay? You have to answer that for yourself.

Personally, I would stick with a straightforward rebuild within the original manufacturer's specifications and using parts that match original equipment as well as possible. After all, most vehicle manufacturers have more engineering money to work with than do aftermarket companies. Also keep an eye on those improvements the original manufacturer made through the years on your engine to bring the mpg up. One item that is now common to most manufacturers is the electronic ignition. This is an item that is well worth the price.

As for the carburetor, the jets would only end up larger if you bored them instead of replacing them, right? Again, look to see what manifold and carburetor the original manufacturer put on top of your engine in later model years.

The biggest increase in mpg is going to come if you can find a high rear axle ratio to install. A 2.93-to-one differential is going to deliver better mpg than a 3.91.

Editor's Note: Double Tech is a question and answer column in which DRIVER will attempt to make clear some of the cloudy subjects in readers' minds. Unlike other automotive magazine Q&A columns, Double Tech doesn't deal with specific questions such as, "Why is my Wink-Snoozymobile hard to start on a rainy morning?" Instead Double Tech fields questions that are of general interest to the majority of our readers. However, when sending questions to Double Tech be sure to include all available information because this will help in finding the correct solution. If you have a question you'd like an answer to, and you feel others could use the knowledge also, send it to:

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Norton AFB, CA 92409

As with most magazines, DRIVER has a long lead time between writing and publication, so don't be surprised if it takes several months to get a reply.

LETTERS to the EDITOR

BACKfire

SNOW CRUISING

It was the end of another work week in February at Bergstrom AFB in Texas. Washington's Birthday was the next Monday and I was looking forward to the long weekend.

My wife picked me up right after work on Friday. We had planned to spend the three-day holiday getting a few odd jobs done around the house and working in the garden. But her father had been sick and we just received word that he was in the hospital for tests, so we decided to make the three-hour trip north to Stephenville, Texas.

We beat the bad weather that arrived later Friday night, and made it to Stephenville with no problems. By Saturday we knew that my father-in-law was OK, just a bad case of the flu, complicated by some pneumonia. He was to be released Sunday morning, so we made plans for the return trip to Austin.

We started out around noon Sunday. There was still a lot of slush on the road, but the sun was shining and I knew conditions would improve as we drove south.

Having been born and raised in eastern Washington State, I felt confident about driving in the snow and slush. It's just a matter of decreasing your speed according to the conditions and not panicking if you begin to slide a little.

We had been on the road about an hour when we came upon a tree lined section that shaded the slush and allowed it to reach out on to the highway a little further than before. No problem, I thought, as it caught the right front wheel and began to pull the car to the right. I was only going about 50 and it was just a matter of letting up on the gas while gently pulling the steering wheel back to the left.

But the car wasn't responding. Try as I would to urge it back on the roadway, it kept pulling further and further toward the snow-filled ditch and the power poles beyond. My confidence was quickly giving way to panic.

Now both the front and rear right tires were off the roadway and it suddenly struck me that the car hadn't slowed at all. We were still doing almost 50 miles an hour as we plowed our way towards disaster. Afraid to touch the brakes, I threw the gear shift into neutral and pulled as hard as I dared to the left.

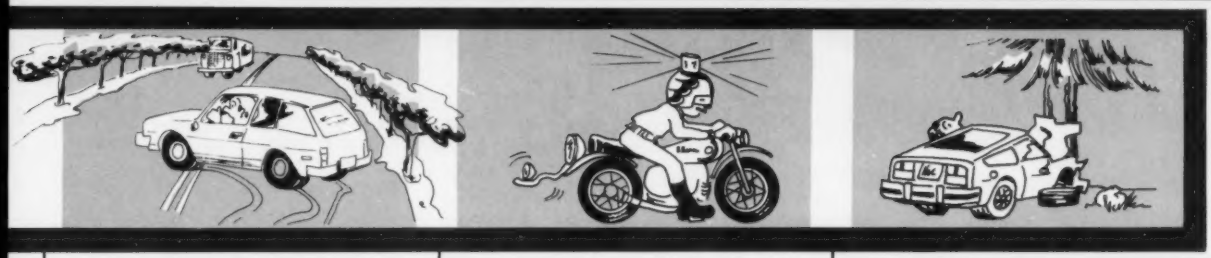
Finally the slushy shoulder loosened its grip and the car headed back on to the roadway. My troubles weren't over, though. As the car finally felt full traction again it bolted across the road into the oncoming lane of traffic. As I looked out of my wife's half of the front windshield, I saw a pickup truck looming ahead.

I knew I had to make a choice. Either try to regain control and get back in my own lane or take the left shoulder of the road. The left shoulder didn't look any more inviting than the side I had just struggled so hard to avoid so I decided to try for my own lane.

To complicate matters, my engine had died and my Chevy wagon was now steering like an old farm truck. Somehow I managed to get back in my own lane just as the pickup whizzed by my left side. After coasting to a stop on the right shoulder and shaking for a moment or two, I had time to wonder what went wrong.

At first I was puzzled. I knew I had made all the right reactions and it shouldn't have happened. Then it hit me. I had the car in cruise control. My foot was only resting on the accelerator and when I let up on it, nothing had happened.

I've had the car for only about six months. It's the first one I have had equipped with cruise control. At first I was afraid of it and just used it when I was on an interstate without much



traffic. But as I grew more confident, I began to use it more often. After all, just a tap of the brake and you're in control again, right?

Well, I found out that weekend that's not right. Under hazardous road conditions there are times when you can't tap the brakes.

I learned a valuable lesson from my experience, but I almost paid an awful price for it . . . the lives of myself, my wife, and my children. I'm writing this in hopes that others can learn from my experience. Cruise control and snow don't mix.

Lt Dick Benoit
Bergstrom AFB, TX

We would be interested in hearing from other readers who drive in snowy weather with cruise control.

WINTER/WINNER TUBES

Inner tubes have been used in the water and on the snow. Now, an old, used inner tube filled with sand can be used in the trunk or back of your vehicle for stability and safety in the form of added traction on snow and icy roads.

Cut an inner tube all the way through, eliminating the air stem. Using nylon rope or equivalent, secure or tie one end and fill the tube with sand. Secure the other end of the tube. Place the sand tube directly over the axle in the trunk, back of the station wagon or pickup, etc. (For individuals who don't want full lengths of sand tubes, cut the tube in half and place on either side of the axle.)

When the sand settles, there is no rolling or movement and the weight stays evenly distributed. This enables near normal carrying capacity.

Sand tubes vary directly proportional to type/size of vehicle and you will have sand available for emergency use.

MSgt George G. Daylong
Wilder, ID

Don't forget to take the sand out next spring so your fuel economy doesn't suffer from the extra weight.

MOTORCYCLE LIGHTS

Just saw the May 80 issue and I wanted to enlighten you some more about the "little black box that converts motorcycle turn signals to taillight/stoplight/turn signals." Forget about the source of this item which is under Chapter 13 (shorthand for a financial condition indicating impending bankruptcy – Ed.) because there are at least two more solid, reliable sources for your readers. If you will check out any recent copy of most any cycle magazine you will find an advertisement for this product, costing less than $25.

No matter what happens, it would be a lot safer if more motorcyclists would add two more lights to the rear (red preferred) which were tied into the taillight and brake lights (dual filament bulbs). I have seen too many motorcyclists with only the standard taillight and it doesn't show up very well, especially in the daytime. Some manufacturers have greatly increased the taillight area for 1980.

As president of the Starlifter Motorcycle Club on McGuire AFB, N.J., I work closely with the 438 MAW Safety Office. I enjoy the motorcycle articles in DRIVER and I make sure I have several copies to pass on to the club-members. Keep up the good work.

SMSgt David Cushing
U.S.A.F. Reserve
P.O. Box 607
Cookstown, NJ 08511

POETRY?

"Are you the one who wrecked my Z?
Left her resting against a tree?
Left the tire tracks all across town?
If you are, I think you better slow down."

"Yes, I'm the one who wrecked your Z,
Left her resting against a tree,
Left her tire tracks all across town.

"But ever since I rolled my pick 'em up,
I've had trouble tellin' which way is up,
So I think we're pretty even all around!"

Anonymous

We're surprised at how many poets there are out there. Usually we don't print verse, but since the staff has been including some of their own in their articles, we thought we might as well give the readers a chance, too.

THINK ABOUT IT

A good one for your humor column. A true story. I was giving my aunt a ride home one dark night. The street was narrow, no street lights, maybe I was driving a little fast, and she was probably a little nervous.

She said, take it easy Fred because "this road is some crooked night time."

Frederick S. Hymes
Det 1 438 MAW
Goose Bay, Nfld
Canada

Guess you had to be there.

letters to the editor

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Timely Topics

ONE OF THOSE DAYS?

A 23-year-old Youngstown, Ohio, woman recently boosted the Missouri Highway Patrol's citation count with four speeding tickets in three hours according to an Associated Press report. Initially clocked at 99 mph she was given only a ticket. At the next stop, for going about 70 mph, her driver's license was kept by the Highway Patrol and she was given a summons which served as a temporary license. Again traveling at approximately 70 mph, she was stopped for the third time and ordered to appear immediately at a county courthouse. In her hurry to get to the courthouse she was arrested for speeding again. This fourth encounter with the flashing lights on the patrol car brought out all her charm. When she pulled over, she tossed a can out the window of her car at the highway patrol vehicle. Fortunately for her, this additional charge was written up as littering. She was released after posting a small bond.

FOUR-WHEEL DISC BRAKES FOR BUSES

Citing greatly increased service life and improved stopping performance, International Harvester Truck Group recently announced four-wheel hydraulic disc brakes as an option for their medium truck and school bus chassis in the 20,000 to 25,000-pound gross vehicle weight range. The new disc brakes were developed in conjunction with the Bendix Corporation in response to growing brake lining wear problems. Decreased lining life results from longer runs with more stops and the increasing use of automatic transmissions, according to International Harvester spokespersons.

Predictions based on a three-year evaluation of six test school bus chassis show disc brake lining life is more than double that of hydraulic drum brakes. Additionally, disc brake rotors have a useful life well over 100,000 miles compared to drums which are commonly replaced every 25,000 to 40,000 miles. Fewer parts, self-adjusting characteristics and visual inspection without removing wheels also contributed to the more than $500-a-year maintenance savings—while the cost of this option is to be less than $500.

However, the bottom line for parents whose children ride buses daily will be the improved stopping performance. While drum-equipped buses required 295 feet to stop at 60 mph, the disc-equipped bus stops in only 210 feet. Additionally, stability during braking is noticeably better with the disc brakes. They provide the driver with better steering control during hard braking and with light loads or on limited traction surfaces. Pedal feel is also improved. As with all disc brakes, they have a proved resistance to fading and better performance when wet.

VW DEVELOPS SUPER-MILEAGE RABBIT

Volkswagen is said to be working on an ultra-high-mileage version of the Rabbit, with an eye toward production in 1982-83, when the car will be substantially redesigned inside and out. At the heart of the super-economy Rabbit will be an all-new three-cylinder diesel, equipped with a mechanically driven stop-start system that would shut down the engine at idle and restart it automatically. Development of the new powerplant is still in the experimental stage, but the fuel economy potential is said to be 70 to 80 mpg. *(AutoWeek)*

TIRES AT FAULT

The United States Court of Appeals for the Fifth Circuit has held that Ford Motor Co. was negligent in the death of a Louisiana driver in spite of the fact that he was intoxicated and traveling at 105 mph at the time of the accident. The accident was caused by improper tires and not by excessive speed or drinking, the appeals court said in upholding an earlier decision by Federal District Court Judge Eugene Davis. Shelby Leleux died and a passenger was seriously injured in June 1976 when his 1976 Mercury Cougar landed in a roadside ditch near Kaplan, La. The appeals court said that the Leleux family should be able to collect damages from Ford because the company failed to warn drivers that the Goodyear Tire & Rubber Co. tires on the Cougar were not made to withstand speeds of more than 85 mph.

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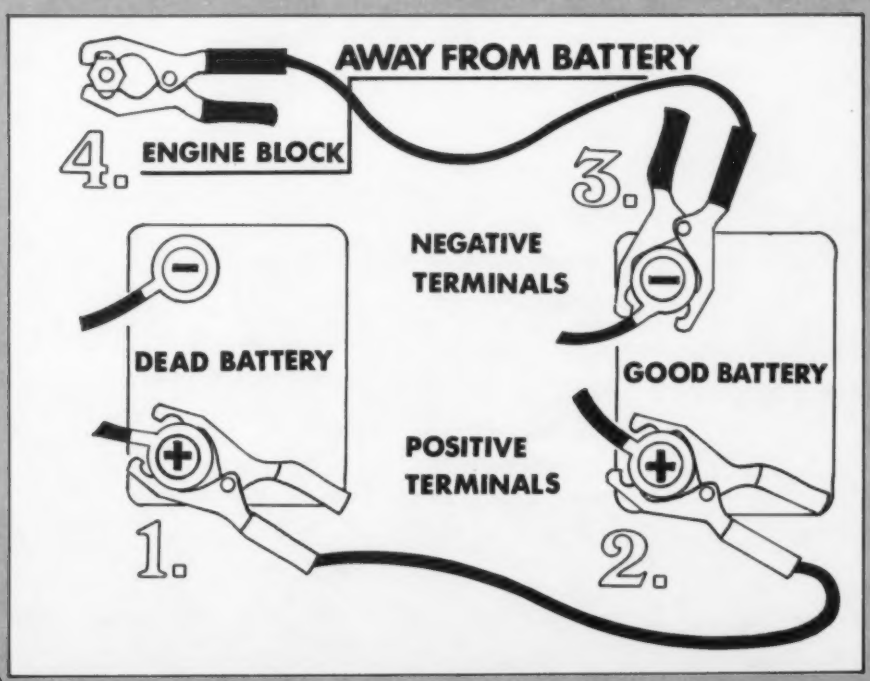
- Batteries same voltage
- Both negative posts grounded
- Check fluid, check for freezing
- Cars not touching
- Ignitions off, accessories off, gears in "park" or "neutral," brakes on
- Attach clamps in order shown, remove in exact opposite order